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REMARKS

Claims 1-9 have been canceled, and claims 10-18 added. Favorable consideration of this application as amended is requested.

Drawing Objections:

The drawings stand objected to as failing to comply with 37 CFR 1.84(p)(5) due to reference numbers 90 and 92 being in Fig. 7, but not mentioned in the specification.

The specification has been amended to properly reference numbers 90 and 92, which refer to vectors W and V, respectively, in Fig. 7 and the specification.

Claim Objections:

Claims 7 and 8 stand objected to because of informalities relating to their dependencies from other claims. Claims 7 and 8 have been canceled, making this objection moot.

Claim Rejections Under 35 U.S.C. § 112:

Claims 5 and 9 stand rejected under 35 USC 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 9 have been canceled, making this rejection moot.

Consequently, applicants request that the above objections and rejections be withdrawn.

Claim Rejections Under 35 U.S.C. § 102:

Claims 1-9 stand rejected under 35 U.S.C. 102(b) as being anticipated by Harbali et al. (US 5,685,527), hereafter referred to as Harbali. Claims 1-9 have been canceled, rendering these rejections moot. However, Harbali will be discussed relative to the new claims 10-18. In order to anticipate a claim under 35 U.S.C. 102(b), each and every element of the claim must be disclosed in the prior art reference.

Independent claim 10 is directed to "an adjustment nut adapted to be rigidly attached to a support member; an adjustment bolt threadably engaged in the adjustment

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nut, having a free end, and having a longitudinal axis; and an adjuster arm adapted to be attached to and extend radially from the torsion bar and have a free end including an involute surface formed thereon that is defined by an evolute circle and extends over a predetermined adjustment range of contact, the involute surface being in contact with the free end of the adjustment bolt and perpendicular to the longitudinal axis of the adjustment bolt at any point of contact between the involute surface and free end of the adjustment bolt within the adjustment range of contact."

For claim 10, then, the surface on the adjuster arm over the predetermined adjustment range of contact is an involute defined by an evolute circle. An involute can be thought of as a curve traced by the end of a taut string when it is wound upon or unwound from a fixed curve (an evolute) on the same plane with it. With a circular evolute, the involute is not circular and so does not have a constant radius. Thus, for claim 10, the surface with which the free end of the adjustment bolt has contact is not a circular arc. Moreover, by providing the torsion bar with such a surface, the adjustment bolt, at any point of contact within the range, can be perpendicular to the surface at the particular point of contact. This is not the case with an adjuster arm having a circular arc, where the adjustment bolt may be perpendicular at certain points of contact but will be oriented at angles that are not ninety degrees at other points of contact.

Harbali is directed to an adjuster (48) that connects to an end (44) of a torsion spring (30). The adjuster (48) includes an adjuster arm (52) with an arm tip (54) where the adjuster bolt (61) makes contact. The Harbali reference discusses the arm tip (54) and adjuster bolt (61) as follows:

Referring now to FIGS. 2-4 . . . The adjuster 48 also includes an adjuster arm 52 that extends radially outward and terminates at an arm tip 54.

The structural support member 16 is in the form of a hat section and comprises front and rear portions 56, 58 depending substantially perpendicularly from a center portion 60. The arm tip 54 of the adjuster 48 abuts an adjuster bolt 61 threaded in a support nut 64. The support nut 64 is positioned between the front and rear portions 56, 58 of the structural support member 16. . . . The bolt 61 extends downward from the structural support member 16 exposing the head of the bolt 61 for easy adjustment.

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It will be noted that the upper end of the adjusting bolt 61 is rounded to provide a point engagement with the spherical arm tip 54 of the adjuster 48. A minimum of frictional resistance to movement of the adjuster 48 relative to the adjusting bolt 61 is thus present and bodily movement of the adjuster 48 relative to the structural support member 16 is permitted.

(Col. 2, lines 40-67, emphasis added)

Thus, Harbali only discloses that the arm tip 54 is spherical for point engagement with a rounded upper end of the adjusting bolt 61, nothing more. The “spherical arm tip” does not read on claim 10 since, as discussed above, claim 10 recites that the surface on the torsion bar over the predetermined adjustment range of contact is an involute defined by an evolute circle, which is not a circular arc as would be the case with a spherical arm tip.

Moreover, contrary to the examiner’s contention, with the arm tip in Harbali having the **spherical surface**, the bolt would not be perpendicular to the to the surface for any contact point—the adjustment bolt being perpendicular to the surface at any point of contact is achieved by an involute defined by an evolute circle.

With at least these limitations of claim 10 missing from Harbali, there cannot be anticipation of this claim under 35 U.S.C. 102(b). Moreover, claims 11-13 depend from claim 10 and are thus distinguishable over the cited reference for at least the reasons discussed above relative to claim 10. In particular, claims 11 and 12 recite equations that define the involute surface, which do not define the circular arc taught in Harbali.

As to the statements made in the office action that lead up to the conclusion that the “applicant is required to prove that the subject matter shown in Harbali et al. would not be retractable as claimed in claims 4, 5, 8, and 9,” some of these statements have no support in Harbali (e.g., that the bolt remains perpendicular to the adjuster arm) and some of these statements are incorrect (e.g., that the bolt remains perpendicular to the adjuster arm, and the assumption that the circular surface in Harbali is the same as the involute surface recited in claims 10-13). It is not even clear how the bolt remains “perpendicular to the **adjuster arm**,” as is stated by the examiner. The present claims are related to the bolt being perpendicular to the **surface** at the point of contact. Moreover, the CCPA decision quoted by the examiner, as stated by the examiner, relates to an applicant

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claiming "an **operation** of a device not explicitly disclosed in a prior art reference." The shape of the involute surface that is defined by an evolute circle relates to the shape of the element and its contact with another claim element, not an operation of a device per se. Thus, this is an inappropriate shifting of the burden to the applicant to prove that the subject matter shown in Harbali would not be retractable as claimed in original claims 4, 5, 8, and 9.

Independent claim 14 is directed to "an adjustment nut adapted to be rigidly attached to a support member; an adjustment bolt threadably engaged in the adjustment nut, having a free end, and having a longitudinal axis; and an adjuster arm adapted to be attached to and extend radially from the torsion bar, having a center of rotation, and having a free end including a contact surface formed thereon that extends over a predetermined adjustment range of contact, is in contact with the free end of the adjustment bolt, and is defined by the following equation:

$$r = \frac{\int_a^b \sqrt{(x(t) - xd)^2 + (y(t) - yd)^2} dt}{b - a}, \text{ where } r \text{ is a radius of curvature of the contact surface,}$$

t is an angle of rotation of the adjuster arm from a nominal position point of contact between the adjustment bolt and the involute surface to a point of contact within the adjustment range of contact, a and b are the limits of the angle of rotation t with $a \leq t \leq b$, xd is an X-axis coordinate of a center point of the arc defined by the radius r, yd is a Y-axis coordinate of the center point of the arc defined by the radius r, x(t) is an X-axis distance of the point of contact between the adjustment bolt and the contact surface from the nominal position point of contact as a function of t, and y(t) is a Y-axis distance of the point of contact between the adjustment bolt and the contact surface from the nominal position point of contact as a function of t."

For claim 14, then, the contact surface on the adjuster arm over the predetermined adjustment range of contact is defined by an equation for a radius of curvature r. The equation for this radius, as discussed in the specification, allows one to closely approximate an involute surface (where the longitudinal axis can always be perpendicular to the surface at any give point of contact) with a circular arc by minimizing the angle error

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between the circle tangent and corresponding involute across the predetermined adjustment range of contact.

Harbali does not teach or suggest anything relating to a specific equation that defines an optimal radius for the surface of its arm tip (54), let alone such an equation that will minimize the angle error between the circle tangent and corresponding involute across the predetermined adjustment range of contact. Moreover, not only does Harbali teach nothing about the bolt remaining perpendicular or close to perpendicular to the arm tip 54, it provides no teaching or suggestion of a reason for wanting to do so. This limitation is completely missing from Harbali. With at least this limitation of claim 14 missing from Harbali, there cannot be anticipation of this claim under 35 U.S.C. 102(b). Moreover, claims 15 and 16 depend from claim 14 and are thus distinguishable over the cited reference for at least the reasons discussed above relative to claim 14. Claim 15 specifically provides equations for coordinates of a central point of an arc that best approximates a desired involute surface.

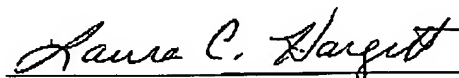
Independent claim 17 contains similar limitations as claim 14 with regard to distinguishing it from Harbali. Therefore, at least for the reasons discussed above relative to claim 14, claim 17 distinguished from Harbali. Claim 18, depending from claim 17 is also distinguishable for at least these reasons.

Consequently, applicants respectfully request that the rejections be withdrawn.

Conclusion:

In summary, the applicants believe that each formal and substantive requirement has now been met. The application is now believed to be in appropriate condition for allowance, which action is respectfully requested.

Respectfully submitted,



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